

AMENDMENTS TO THE CLAIMS:

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This listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

1. (original) A liquid switch, comprising:
a channel for flowing a first liquid therethrough;
a damming portion provided in said channel for damming said first liquid; and
a trigger channel communicated into said channel at a position of said damming portion or of downstream thereof for guiding a second liquid to said damming portion.
2. (original) The liquid switch according to claim 1, wherein said damming portion includes a member for holding said first liquid.
3. (original) The liquid switch according to claim 2, wherein a channel surface area per channel unit volume in said damming portion is larger than a channel surface area per channel unit volume in other portions of the channel.
4. (original) The liquid switch according to claim 2, wherein said member holding said first liquid is a plurality of particles.
5. (original) The liquid switch according to claim 2, wherein said member holding said first liquid is a porous member.

6. (original) The liquid switch according to claim 2, wherein said member holding said first liquid includes a plurality of protruding portions that are separately arranged.

7. (original) The liquid switch according to claim 2, wherein said damming portion includes a region exhibiting a lyophobicity for said first liquid.

8. (original) The liquid switch according to claim 7, further comprising a region exhibiting a lyophobicity for said first liquid at a downstream of an intersecting point in said channel where said channel intersects with and said trigger channel.

9. (currently amended) The liquid switch according to ~~any one of claims 1 to 8~~ claim 1, wherein said liquid switch is configured to include a valve structure in said trigger channel, and wherein said valve structure is actuated once a specified quantity of the second liquid is introduced, to closedown said trigger channel.

10. (original) A liquid switch, comprising:
a channel for flowing a liquid therethrough; and
a damming portion provided in said channel for damming said liquid;
wherein said damming portion includes a member holding said liquid.

11. (original) The liquid switch according to claim 10, wherein a channel surface area per channel unit volume in said damming portion is larger than a channel surface area per channel unit volume in other portions of the channel.

12. (currently amended) The liquid switch according to claim 10 [[or 11]], wherein said member holding said liquid is a plurality of particles.

13. (currently amended) The liquid switch according to claim 10 [[or 11]], wherein said member holding said liquid is a porous member.

14. (currently amended) The liquid switch according to claim 10 [[or 11]], wherein said member holding said liquid includes a plurality of protruding portions that are separately arranged.

15. (original) A liquid switch, comprising:
a channel for flowing a liquid therethrough; and
a damming portion provided in said channel for damming said liquid;
wherein said damming portion includes a surface exhibiting a lyophobicity for said liquid.

16. (original) The liquid switch according to claim 15, further comprising a moving member movably disposed between said damming portion and a place except said damming portion in said channel,
wherein said moving member has a surface exhibiting a lyophilicity for said liquid, and that a position of said moving member can be adjusted from outside of said channel.

17. (original) The liquid switch according to claim 16, further comprising a positioning unit that adjusts the position of said moving member from outside thereof,
wherein one of said moving member and said positioning units, is a magnet and the other is a magnetic material.

18. (original) A liquid switch, comprising:
a channel for flowing a first liquid therethrough;
a secondary channel communicating with said channel;
a chamber communicating with said secondary channel; and
a trigger channel communicating with said chamber and for
introducing a second liquid into said chamber,
wherein a lyophobic material exhibiting a lyophobicity for
said first liquid is stored in an interior of said chamber,
and
wherein said liquid switch is configured that said lyophobic
material is introduced from said chamber into said channel
once the second liquid is introduced from said trigger channel
into said chamber.

19. (original) The liquid switch according to claim 18,
wherein said chamber comprises:
a first compartment communicating with said secondary
channel;
a second compartment for storing said lyophobic material; and
a separating portion disposed between said first
compartment and said second compartment for separating the
compartments,
wherein said trigger channel communicates with said separating
portion, and said liquid switch is configured that said
lyophobic material moves from said first compartment to said
second compartment once the second liquid is introduced from
said trigger channel.

20. (currently amended) A microchip, comprising:
a substrate;
a sample channel formed on said substrate for passing a
sample therethrough; and
sample separating portion provided in said sample
channel,

wherein the liquid switch according to ~~any of claims 1 to 19~~
claim 1 is disposed in said sample channel, and a feeding of
said sample from said sample channel to said sample separating
portion is controlled with said liquid switch.

21. (currently amended) A microchip, comprising:

a substrate;

a liquid channel formed on said substrate for flowing a
liquid therethrough; and

a reaction portion provided in said liquid channels,
wherein the liquid switch according to ~~any of claims 1 to 19~~
claim 1 is disposed in said liquid channel, and a feeding of
said liquid from said liquid channel to said reaction portion
is controlled with said liquid switch.

22. (original) The microchip according to claim 21, further
comprising: a reservoir communicating with said reaction
portion, for being introduced with an agent,
wherein said liquid switch is disposed in a liquid channel
extending from said reservoir to said reaction portion, and an
introduction of said agent from said reservoir into said
reaction portion is controlled with said liquid switch.

23. (original) The microchip according to claim 22, wherein
said agent is an enzymatic digestion solution.

24. (original) The microchip according to claim 23, wherein
said enzymatic digestion solution is a tryptic digestion
solution.

25. (currently amended) A microchip, comprising:

a substrate;

a principal channel formed on said substrate for flowing
a liquid therethrough;

a clock channel for controlling a timing of said liquid passing a predetermined point in said principal channel; and
a control channel communicating with said principal channel and said clock channel,
wherein the liquid switch according to ~~any of claims 1 to 19~~
claim 1 is disposed in said control channel, and a transfer of
said liquid in said principal channel is controlled with said
liquid switch.

26. (original) A mass spectrometry system, comprising:
a separating unit that separates biological sample
according to molecular size or a property thereof;
a pre-processing unit that conducts a pre-processing
including an enzymatic digestion processing for the sample
separated by said separating unit;
a drying unit that dries the preprocessed sample; and
a mass spectrometry unit that conducts mass spectrometry
of the dried sample,
wherein said separating unit includes the microchip according
to claim 20.

27. (currently amended) A mass spectrometry system,
comprising:
a separating unit that separates biological sample
according to molecular size or a property thereof;
a pre-processing unit that conducts a pre-processing
including an enzymatic digestion processing for the sample
separated by said separating unit;
a drying unit that dries the preprocessed sample; and
a mass spectrometry unit that conducts mass spectrometry
of the dried sample,
wherein said pre-processing unit includes the microchip
according to ~~any one of claims 21 to 24~~ claim 21.

28. (original) A mass spectrometry system, comprising:
a separating unit that separates biological sample according to molecular size or a property thereof;
a pre-processing unit that conducts a pre-processing including an enzymatic digestion processing for the sample separated by said separating unit;
a drying unit that dries the preprocessed sample; and
a mass spectrometry unit that conducts mass spectrometry of the dried sample,
wherein said separating unit, said pre-processing unit or said drying unit includes the microchip according to claim 25.